

## **REMARKS**

### **Allowable Claim**

The Office Action deems claim 4 as allowable if rewritten in independent format to include the features of the base claim(s) on which it depends.

Accordingly, claim 4 is now presented in an independent format incorporating the features of claim 1. Claim 4 also depends on claim 3. However, the recitation in claim 3 that “the laser generates lasing radiation at an operating temperature above about 87 K” is not expressly repeated in amended claim 4, as claim 4 recites that “the laser generates lasing radiation at an operating temperature above about 130 K.”

### **Claim Objections**

In response to the objection raised with respect to claim 27, that claim is amended as indicated above to replace the phrase “... wherein the laser is capable of generating lasing ...” with “... wherein the laser generates lasing...” This amendment is believed to overcome the objection without modifying the scope of the claim.

### **Rejections Under 35 U.S.C. 102**

The Office Action rejects claims 1-2 and 4-26 as being anticipated by an article entitled “3.4-THz quantum cascade laser based on longitudinal-optical-phonon scattering for depopulation,” authored by Williams *et al.* and published in Applied Physics Letters in 2003.

This article, however, is not prior art relative to the claimed invention for the following reasons. The authors of this article include the inventors of the claimed invention, namely, Qing Hu and Benjamin Williams, as well as the following individuals: Hans Callabaut, Sushil Kumar and John L. Reno. However, the attached declaration of the inventors of the present invention attests that to the extent the article discloses the claimed subject matter, these additional authors are not co-inventors of that subject matter. More specifically, the attached declaration indicates that Hans Callebaut and Sushil Kumar simply performed experiments under supervision of Prof. Qing Hu

(one of the co-inventors of the present invention) and John L. Reno fabricated prototype laser samples based on the design information supplied to him by Prof. Qing Hu. Moreover, the publication date of the article (2003) is less than a year prior to the filing date of the present application (i.e., September 12, 2003). Accordingly, this article is not prior art relative to the claimed invention.

### **Rejections Under 35 U.S.C. 103**

The Office Action rejects claim 28 as being obvious over the above article of Williams et al.

As noted above, this article of Williams et al. is not prior art relative to the claimed subject matter, and hence claim 28 is patentable.

The Office Action further rejects claims 3 and 27 as being obvious over the combined teachings of the above article of Williams (herein referred to as the “primary” article) and another article authored by Williams *et al.* entitled “3.4 THz quantum cascade laser operating above liquid nitrogen temperature,” published in Elec. Letter, vol. 39, no. 12 on June 12, 2003 (herein referred to as the “secondary” article).

As noted above, the primary Williams article is not prior art relative to the present application. Similarly, the second Williams article is not prior art relative to the present application. In particular, similar to the primary article, the secondary articles lists as authors the inventors of the present application (i.e., Qing Hu and Benjamin Williams) as well as Hans Callebaut, Sushil Kumar and John L. Reno. However, the inventors of the present application declare in the attached Declaration that, to the extent the secondary article discloses the claimed subject matter, Hans Callebaut, Sushil Kumar and John L. Reno are not co-inventors of that subject matter. In particular, the Declaration asserts that Hans Callebaut and Sushil Kumar performed experiments under supervision of Prof. Hu and John L. Reno fabricated prototype laser samples based on design information supplied to him by Prof. Hu.

As the secondary article was published less than a year before the filing date of the present application, it is not prior art relative to the present application.

Hence, claims 3 and 27 are patentable as well.

**CONCLUSION**

In view of the attached Declaration of the inventors and the above amendments and remarks, Applicants respectfully request allowance of the application. The Examiner is invited to call the undersigned at (617) 439-2514 if there are any questions.

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Respectfully submitted,

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